



## HARLEM DNA LAB MIDDLE SCHOOL STUDENT PROGRAMS

The DNA Learning Center is the world's first science museum devoted to genetics education for the public. It is an operating unit of the Cold Spring Harbor Laboratory, a world-renowned center for genetics research. Our services include a variety of hands-on laboratories to introduce elementary and middle school students to the wonderful world of molecular biology.

### SUGGESTED FOR GRADES 5 & 6

**Baggie Cell Model** (1 hour)  
Learn about the structure and function of the cell and make a cell model.

**Diversity of Life** (1 or 2 hours)  
Investigate taxonomy using compound microscopes

**DNA Models** (1 hour)  
Learn about the genetic code and make a 3-D model of the double helix. (\$4 materials fee per student)

**Mutant Organisms** (1 hour)  
Discuss the impact of genetic mutations and observe mutations in fruit flies and/or nematodes using stereo-microscopes.

**Mendelian Inheritance** (1 hour)  
Use corn as a model to investigate the laws of inheritance.

**DNA Extraction** (1 hour)  
Grades 5, 6, 7  
Extract DNA from harmless bacteria.



### SUGGESTED FOR GRADES 6 & 7

**Molecular Models and Bubbling Liver** (1 hour)  
Observe the metabolic enzyme catalase as it reacts with hydrogen peroxide and learn about the factors that affect enzyme activity.

**Enzymatic Food Production** (1 hour)  
Use enzymes to make cheese and apple juice.

**Better Milk for Cats** (1 hour)  
Build a bioreactor to convert regular milk into lactose free milk.

**Bacteria and Antibiotics** (1 hour)  
Observe the effect of antibiotics on bacteria.

**Antibiotic Resistant Bacteria** (1 or 2 hours)  
Genetically engineer bacteria to become antibiotic resistant.

**Viral Infection** (1 hour)  
Infect bacteria with a virus and observe the result.

**Glowing Genes** (1 or 2 hours)  
Genetically engineer bacteria with the GFP (Green Fluorescent Protein) gene for bioluminescence.

### SUGGESTED FOR GRADE 8

**Glowing Genes** (1 or 2 hours)  
Genetically engineer bacteria with the GFP (Green Fluorescent Protein) gene for bioluminescence.

**Protein Purification** (2 hours)  
Collect and purify green fluorescent protein from glowing bacteria.

**DNA Fingerprint** (2 hours)  
Use gel electrophoresis to analyze and compare "evidence" DNA to "suspects."

**Gene Therapy** (1 or 2 hours)  
Genetically engineer "lactose intolerant" bacteria to become "lactose tolerant."

### RESERVATION DETAILS

- Classroom is limited to **32 students** and are reserved on a first come, first served basis.
- Hands-on two-hour lab field trips are **\$385/class**.
- Funds may be available for scholarships.

### Contact

Mary Lamont at 516-719-1296 to make a reservation.

